

REMARKS

Introduction

In response to the Office Action dated June 26, 2007, Applicants have amended the specification, and claims 1, 5, and 6. Support for amended claims 1 and 6 is found in, for example, Figs. 11(a) to 11(c); pg. 11, line 13-pg. 12, line 4. Support for amended dependent claim 5 is found in, for example, pg. 5, lines 21-22. Care has been taken to avoid the introduction of new matter. Claims 9-11 are withdrawn. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Drawings

The drawings are objected to under 35 C.F.R. 1.83(a) for failing to show the semiconductor FIN having a convex shape as described in the specification. This objection is traversed. In the specification, page 5, line 21 has been amended to recite, "the semiconductor FIN is preferably formed so as to have a convex shape." The phrase --when viewed from the bottom of the trench-- has been deleted. Fig. 11 shows a FIN 6 having a convex shape. In view of the foregoing, it is respectfully submitted that no drawing revisions are necessary.

Withdrawal of the foregoing objection is respectfully requested.

Claim Objections

The Office Action asserts that in claim 6, the phrase "the gate insulating film" has no antecedent basis. Amended claim 6, for example, has been amended to recite, "the first gate insulating film."

Claim Rejection Under 35 U.S.C. § 102

Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,996,574 (hereinafter Shirasaki). As a preliminary matter, the Office Action also included arguments with respect to claim 4.

Shirasaki shows a source, drain, and semiconductor FIN buried in a trench and a gate insulating film formed over sides and the top of the semiconductor FIN (see Figs. 10 and 10A). The gate electrode of Shirasaki has a concave/convex shape repeated in the gate width direction. Importantly, the gate electrode of Shirasaki has a termination *only* on **one side** of the semiconductor FIN. Thus, Shirasaki fails to disclose or suggest, at a minimum, “...**a gate electrode having** in the trench a termination structure extending from the upper surface of the semiconductor FIN toward a bottom of the trench **along both sides of the semiconductor FIN**,” as recited in amended claim 1.

According to the claimed subject matter per amended claim 1, the gate electrode lies in the gate width direction and has a termination structure extending from above the FIN toward the bottom of the trench along both side walls of the FIN. The claimed gate electrode does not include a concave portion that covers the bottom and side walls of the trench. Thereby as taught in the instant specification, the size of the trench is greatly reduced in the gate width direction resulting in a size-reduced FINFET (*see, e.g.*, pg. 15, line 18-pg. 16, line 1). As explained above, Shirasaki does not disclose or suggest this aspect of the claims.

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed, either expressly or inherently (noting that “inherency may not be established by probabilities or possibilities,” *Scaltech Inc. v. Retec/Tetra*, 178 F.3d 1378 (Fed. Cir. 1999)), in a single prior art reference, *Akzo N.V. v. U.S. Int’l Trade Commission*, 808 F.2d 1471 (Fed. Cir.

Application No.: 10/549,291

1986), based on the forgoing, it is submitted that Shirasaki does not anticipate claim 1 nor any claim dependent thereon. Thus, dependent claims 2-8 are also patentable for at least the reasons set forth above.

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Michael E. Fogarty
Registration No. 36,139

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 MEF/LAK:lnm
Facsimile: 202.756.8087
Date: September 25, 2007

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